



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,115	10/11/2000	Charu C. Aggarwal	YOR920000429US1	4940

7590 04/29/2005

William E. Lewis  
Ryan, Mason & Lewis, LLP  
90 Forest Avenue  
Locust Valley, NY 11560

EXAMINER
----------

STARKS, WILBERT L

ART UNIT	PAPER NUMBER
----------	--------------

2129

DATE MAILED: 04/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/686,115

**Applicant(s)**

AGGARWAL ET AL.

**Examiner**

Wilbert L. Starks, Jr.

**Art Unit**

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 U.S.C. §101***

1. 35 U.S.C. §101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

the invention as disclosed in claims 1-30 is directed to non-statutory subject matter.

2. Claims 1-10 are not claimed to be practiced on a computer, therefore, it is clear that the claims are not limited to practice in the technological arts. On that basis alone, they are clearly nonstatutory.

3. Regardless of whether any of the claims are in the technological arts, none of them is limited to practical applications in the technological arts. Examiner finds that In re Warmerdam, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) controls the 35 U.S.C. §101 issues on that point for reasons made clear by the Federal Circuit in AT&T Corp. v. Excel Communications, Inc., 50 USPQ2d 1447 (Fed. Cir. 1999). Specifically, the Federal Circuit held that the act of:

...[T]aking several abstract ideas and manipulating them together adds nothing to the basic equation. AT&T v. Excel at 1453 quoting In re Warmerdam, 33 F.3d 1354, 1360 (Fed. Cir. 1994).

Examiner finds that Applicant's "data set" references are just such abstract ideas.

4. Examiner bases his position upon guidance provided by the Federal Circuit in *In re Warmerdam*, as interpreted by *AT&T v. Excel*. This set of precedents is within the same line of cases as the *Alappat-State Street Bank* decisions and is in complete agreement with those decisions. *Warmerdam* is consistent with *State Street*'s holding that:

Today we hold that *the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price*, constitutes a practical application of a mathematical algorithm, formula, or calculation because it produces 'a useful, concrete and tangible result' -- *a final share price momentarily fixed for recording purposes and even accepted and relied upon by regulatory authorities and in subsequent trades*. (emphasis added) *State Street Bank* at 1601.

5. True enough, that case later eliminated the "business method exception" in order to show that business methods were not per se nonstatutory, but the court clearly *did not* go so far as to make business methods *per se* statutory. A plain reading of the excerpt above shows that the Court was *very specific* in its definition of the new *practical application*. It would have been much easier for the court to say that "business methods were per se statutory" than it was to define the practical application in the case as "...the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price..."

6. The court was being very specific.

Art Unit: 2129

7. Additionally, the court was also careful to specify that the “useful, concrete and tangible result” it found was “a final share price momentarily fixed for recording purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.” (i.e. the trading activity is the further practical use of the real world monetary data beyond the transformation in the computer – i.e., “post-processing activity”.)

8. Applicant cites no such specific results to define a useful, concrete and tangible result. Neither does Applicant specify the associated practical application with the kind of specificity the Federal Circuit used.

9. Furthermore, in the case *In re Warmerdam*, the Federal Circuit held that:

...[T]he dispositive issue for assessing compliance with Section 101 in this case is whether the claim is for a process that goes beyond simply manipulating ‘abstract ideas’ or ‘natural phenomena’ ... As the Supreme Court has made clear, ‘[a]n idea of itself is not patentable, ... taking several abstract ideas and manipulating them together adds nothing to the basic equation.’ *In re Warmerdam* 31 USPQ2d at 1759 (emphasis added).

10. Since the Federal Circuit held in *Warmerdam* that this is the “dispositive issue” when it judged the usefulness, concreteness, and tangibility of the claim limitations in that case, Examiner in the present case views this holding as the dispositive issue for determining whether a claim is “useful, concrete, and tangible” in similar cases. Accordingly, the Examiner finds that Applicant manipulated a set of abstract “data sets” to solve purely algorithmic problems in the abstract (i.e., what *kind* of “data set” is used? Algebraic word problems? Boolean logic problems? Fuzzy logic algorithms? Probabilistic word problems? Philosophical ideas? Even vague expressions, about which even reasonable persons could differ as to their meaning? Combinations thereof?) Clearly, a claim for manipulation of “data sets” is provably even more abstract (and thereby less limited in practical application) than pure “mathematical algorithms” which the Supreme Court has held are per se nonstatutory – in fact, it *includes* the expression of nonstatutory mathematical algorithms.

11. Since the claims are not limited to exclude such abstractions, the broadest reasonable interpretation of the claim limitations includes such abstractions. Therefore, the claims are impermissibly abstract under 35 U.S.C. §101 doctrine.

12. Since *Warmerdam* is within the *Alappat-State Street Bank* line of cases, it takes the same view of “useful, concrete, and tangible” the Federal Circuit applied in *State Street Bank*. Therefore, under *State Street Bank*, this could not be a “useful, concrete and tangible result”. There is only manipulation of abstract ideas.

13. The Federal Circuit validated the use of *Warmerdam* in its more recent *AT&T Corp. v. Excel Communications, Inc.* decision. The Court reminded us that:

Finally, **the decision in *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) is not to the contrary.** \*\*\* The court found that the claimed process did nothing more than manipulate basic mathematical constructs and concluded that ‘taking several abstract ideas and manipulating them together adds nothing to the basic equation’; hence, the court held that the claims were properly rejected under §101 ... Whether one agrees with the court’s conclusion on the facts, the holding of the case is a straightforward application of the basic principle that mere laws of nature, natural phenomena, and abstract ideas are not within the categories of inventions or discoveries that may be patented under §101. (emphasis added) *AT&T Corp. v. Excel Communications, Inc.*, 50 USPQ2d 1447, 1453 (Fed. Cir. 1999).

14. Remember that in *In re Warmerdam*, the Court said that this was the dispositive issue to be considered. In the *AT&T* decision cited above, the Court reaffirms that this is the issue for assessing the “useful, concrete, and tangible” nature of a set of claims under §101 doctrine. Accordingly, Examiner views the *Warmerdam* holding as the dispositive issue in this analogous case.

15. The fact that the invention is merely the manipulation of *abstract ideas* is clear. The data referred to by Applicant’s phrase “data set” is simply an abstract construct that does not limit the claims to the transformation of real world data (such as monetary data

Art Unit: 2129

or heart rhythm data) by some disclosed process. Consequently, the necessary conclusion under *AT&T*, *State Street* and *Warmerdam*, is straightforward and clear.

The claims take several abstract ideas (i.e., "data sets" in the abstract) and manipulate them together adding nothing to the basic equation. Claims 1-30 are, thereby, rejected under 35 U.S.C. §101.

### ***Claim Rejections - 35 U.S.C. §112***

The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

16. Claims 1-30 are rejected under 35 U.S.C. §112, first paragraph because current case law (and accordingly, the MPEP) require such a rejection if a §101 rejection is given because when Applicant has not in fact disclosed the practical application for the invention, as a matter of law there is no way Applicant could have disclosed *how* to practice the *undisclosed* practical application. This is how the MPEP puts it:

("The how to use prong of section 112 **incorporates as a matter of law** the requirement of 35 U.S.C. 101 that the specification disclose as a matter of fact a practical utility for the invention.... If the application fails as a matter of fact to satisfy 35 U.S.C. § 101, then the application **also fails as a matter of law** to enable one of ordinary skill in the art to use the invention under 35 U.S.C. § 112."; In re Kirk, 376 F.2d 936, 942, 153 USPQ 48, 53 (CCPA 1967) ("Necessarily, compliance with § 112 requires a description of how to use presently useful inventions, **otherwise an applicant would anomalously be required to teach how to use a useless invention.**").See, MPEP 2107.01(IV), quoting In re Kirk (emphasis added).

Therefore, claims 1-30 are rejected on this basis.



### ***Response to Arguments***

17. Applicant's arguments filed 07 February 2005 have been fully considered but they are not persuasive. Specifically, the Applicants argue the following:

#### **Argument 1**

With regard to the rejections of claims 1-30 under 35 U.S.C. §101 and §112, first paragraph, Applicants have amended independent claims 1 and 10 so that they are claimed for practice on a computer. Independent claims 11, 20, 21 and 30 recite the use of a processor and/or a machine readable medium having one or more programs, and thereby are already claimed for practice on a computer (emphasis added.)

18. Such an amendment merely brings the claims into the realm of being practiced in "the technological arts" (i.e., being practiced on a computer.) Nowhere in the USPTO Guidelines, the MPEP, case law, Federal statutes, or the U.S. Constitution does it even imply that merely bringing a set of claim limitations into the technological arts is sufficient to make a set of claims per se statutory on that basis alone. Examiner commends Applicants for bringing the claims into the technological arts, but reminds them that the claim limitations must be limited to a practical application in the "technological arts" to be statutory. Applicants show no evidence that the claims are (or are even intended to be) so limited. Such a limitation in the claims is a necessary requirement for them to be held statutory. Said a different way, the Federal Circuit in *In re Warmerdam*, held that:

...[T]he dispositive issue for assessing compliance with Section 101 in this case is whether the claim is for a process that goes beyond simply manipulating 'abstract ideas' or 'natural phenomena' ... As the Supreme Court has made clear, '[a]n idea of itself is not patentable, ... taking several abstract ideas and manipulating them together adds nothing to the basic equation. In re Warmerdam 31 USPQ2d at 1759 (emphasis added).

19. Note that the application of an algorithm (i.e., the "manipulating" reference from the quote above) to a set of abstract inputs (i.e., "abstract ideas" from the quote above...and abstract "data sets" from the present application) "adds nothing to the basic equation."

20. That is, a mere algorithm applied to abstract inputs does not automatically make the combination statutory. Applicants need to provide more.

21. If Applicants' "data sets" were something less abstract...something more concrete and tangible (such as heart rhythm data, for instance) then it would be more likely that the claims would be held to be statutory.

22. No such limitation is extant in the claims, so the 35 U.S.C. §101/§112 1<sup>st</sup> paragraph rejections were proper and thereby STAND.

## Argument 2

Examiner contends that Applicants' "data set" is an abstract idea. Applicants believe that the Office Action fails to appreciate the nature of the subject matter of the present invention. For example, on page 1, lines 4-7, the application states that the present invention is related to methods for performing detection in accordance with various high dimensional domain applications where it is important to be able to find and detect outliers which deviate considerably from the rest of the data."

23. Examiner is well aware of what the invention is and how it might be "useful" in the technological sense...the same way that the arbitrarily selected equation " $\cos(180^\circ) = -1$ " has been "useful" in the technological sense and the way a pure statistical outlier detection algorithm could also be so "useful." But, there is a difference between the "usefulness" of a pure algorithm and the "utility" requirement of 35 U.S.C. §101. The "utility" requirement of §101 is a legal term of art that requires that the algorithm be applied to a practical application in the technological arts in order to be eligible for Letters Patent. It is true that " $\cos(180^\circ) = -1$ " is "useful" in a colloquial sense, but this imprecise term includes clearly unpatentable subject matter and is not being used by Examiner in the application of this rejection to the claims. Examiner uses the more precise definition that requires a practical application in the technological arts. Note that this definition properly excludes " $\cos(180^\circ) = -1$ " from consideration for Letters Patent, while the more colloquial "usefulness" does not. Applicant has not met the burden of proving the claims to be statutory. On this basis, the rejections STAND.

### **Argument 3**

24. Applicants recite material that occupies the bulk of page 9 of the arguments as evidence that the claims are statutory. Examiner disagrees.

25. Examiner finds that this material is not claimed as a limitation on the claims and since it is in the Specification, cannot be read into the claims unless they are placed in

Art Unit: 2129

means-plus-function-format. Since the claims are not in such a format, such recitals are irrelevant. Applicant has not met the burden of proving the claims to be statutory. On this basis, the rejections STAND.

#### Argument 4

It is well-established law that an invention directed toward techniques that may be implemented in one or more processing devices, such as one or more computer systems, as illustrated in FIGS. 2 and 3, is proper statutory subject matter under §101 **if it produces a useful, concrete and tangible result**. *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 47 USPQ2d 1596 (Fed. Cir. 1998). In fact, the Federal Circuit in *State Street* goes on to state that subject matter is rendered statutory even if the useful result is expressed in numbers, such as price, profit, percentage, cost, or loss. Thus, the issue is whether the present invention produces a useful, concrete and tangible result. Applicants strongly assert that the invention does produce a useful, concrete and tangible result. At a minimum, the invention, as recited in the subject claims, produces a useful, concrete and tangible result in the form of one or more data points identified as one or more outliers in the data set (emphasis added.)

26. Applicant recites State Street as if it is somehow in conflict with In re Warmerdam.

27. It is not.

28. The Federal Circuit in State Street looked back to Alappat as the origin of its current doctrine. Warmerdam was decided one month after Alappat and is still good law. Further, the Federal Circuit validated the use of Warmerdam in its more recent AT&T Corp. v. Excel Communications, Inc. decision. The Court reminded us that:

Art Unit: 2129

Finally, the decision in *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994) is not to the contrary. \*\*\* The court found that the claimed process did nothing more than manipulate basic mathematical constructs and concluded that 'taking several abstract ideas and manipulating them together adds nothing to the basic equation'; hence, the court held that the claims were properly rejected under §101 ... Whether one agrees with the court's conclusion on the facts, the holding of the case is a straightforward application of the basic principle that mere laws of nature, natural phenomena, and abstract ideas are not within the categories of inventions or discoveries that may be patented under §101. (emphasis added) *AT&T Corp. v. Excel Communications, Inc.*, 50 USPQ2d 1447, 1453 (Fed. Cir. 1999).

29. Remember that in *In re Warmerdam*, the Court said that this was the dispositive issue to be considered. In the *AT&T* decision cited above, the Court reaffirms that this is the issue for assessing the "useful, concrete, and tangible" nature of a set of claims under §101 doctrine. Accordingly, Examiner views the *Warmerdam* holding as the dispositive issue in this analogous case. The §101 rejections in this case are proper and, thereby STAND.

### Argument 5

With regard to the rejection of claims 1-3, 10-13, 21-23 and 30 under 35 U.S.C. §102(b) as being anticipated by Zhang, Applicants have amended independent claims 1, 10, 11, 20, 21 and 30 to recite that the determination of subsets of dimensions and corresponding ranges, or patterns, in the data set which are sparse in density use an algorithm capable of utilizing at least one of the processes of solution recombination, selection and mutation over a population of multiple solutions.

30. Regarding the §102 rejections in the case, the current rejections are WITHDRAWN in view of the present amendments.

### Conclusion

31. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Wilbert L. Starks, Jr. whose telephone number is (571) 272-3691.

Alternatively, inquiries may be directed to the following:

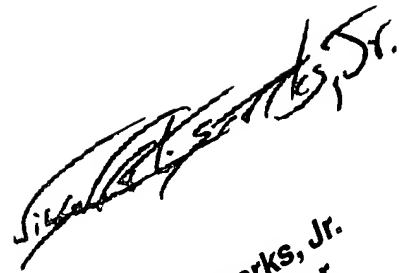
<b>S. P. E. Anthony Knight</b>	<b>(571) 272-3687</b>
<b>After-final (FAX)</b>	<b>(703) 746-7238</b>
<b>Official (FAX)</b>	<b>(703) 746-7239</b>
<b>Non-Official/Draft (FAX)</b>	<b>(703) 746-7240</b>

Application/Control Number: 09/686,115  
Art Unit: 2129

Page 14

WLS

27 April 2005

A handwritten signature in black ink, slanted upwards to the right. The signature appears to read "Wilbert L. Starks, Jr." with a stylized, cursive script.

Wilbert L. Starks, Jr.  
Primary Examiner  
Art Unit - 2121